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| 09/701,587 | 11/30/2000 | Hans Peter Rath | 49091 | 5855 |
| 26474 | 7590 | 09/16/2004 | EXAMINER | |
| KEIL & WEINKAUF 1350 CONNECTICUT AVENUE, N.W. WASHINGTON, DC 20036 | | | | LU, C CAIXIA |
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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

MAILED

Application Number: 09/701,587
Filing Date: November 30, 2000
Appellant(s): RATH, HANS PETER

SEP 16 2004

GROUP 1700

Daniel S. Kim
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed August 10, 2004.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The brief does not contain a statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief. Therefore, it is presumed that there are none. The Board, however, may exercise its discretion to require an explicit statement as to the existence of any related appeals and interferences.

(3) Status of Claims

The statement of the status of the claims contained in the brief is incorrect. A correct statement of the status of the claims is as follows:

Claim 10 is withdrawn from consideration as not directed to the elected Group I, claims 1-9. See appellant's Response filed on July 8, 2002.

Claim 11 has been canceled. See appellant's Response filed on November 6, 2003.

This appeal involves claims 1-9.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

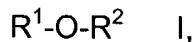
(7) Grouping of Claims

The rejection of claims 1-9 stand or fall together because appellant's brief does not include a statement that this grouping of claims does not stand or fall together and reasons in support thereof. See 37 CFR 1.192(c)(7).

(8) ClaimsAppealed

A substantially correct copy of appealed claims 1-9 appears on page 6-8 of the Appendix to the appellant's brief. The minor errors are as follows:

- (i) Claims 10 and 11 should not be included.
- (ii) The limitation of claim 1 under "b)" is narrower in scope according to appellant's final amendment filed on November 6, 2003 and should be read as the following (see the final Amendment filed on November 6, 2003):
 - "b) a bis-secondary ether containing no tertiary alkyl groups and having the formula I



where R¹ and R² are secondary alkyl groups having 3-10 carbon atoms."

(9) *Prior Art of Record*

5,408,018 Rath 4-1995

(10) *Grounds of Rejection*

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rath (US 5,408,018).

The instant claims are directed to a cationic polymerization process for preparation of a polyisobutene having a terminal vinylidene group content of more than

80 mol% and average molecular weight of 500-5000 in the presence of a complex comprising boron trifluoride, a primary or secondary alcohol, and a bis-secondary ether containing no tertiary alkyl groups.

Rath teaches a process for preparing polyisobutene with a content of terminal vinylidene groups of more than 80 mol % and average molecular weight of 500-5000 in the presence of a complex comprising boron trifluoride, secondary alcohol, and dialkyl ether (col.4, lines 44-57). Rath further teaches that the dialkyl ethers can be symmetrical and unsymmetrical C₂-C₂₀ dialkyl ethers and the exemplified alkyl groups are methyl, ethyl, n-butyl, isopropyl, isoctyl, 2-butyl, t-butyl, etc. (col. 7, lines 61-65, col. 8, lines 30-42, and col. 13, line 17). The dialkyl ethers with alkyls such as isopropyl and 2-butyl are secondary ethers.

Rath's Examples 6, 7 and 8 teach polymerization processes for preparation of a polyisobutene having a terminal vinylidene group content of more than 80 mol% in the presence of a complex comprising boron trifluoride, 2-butanol, and an ether of 2-butyl tert-butyl ether or di-n-butyl ether.

It is noted that Rath teaches that the tertiary alkyl group containing ether is preferred, however, Rath's dialkyl ethers are not limited to the tertiary alkyl group containing ether. As shown above, Rath's dialkyl ether includes symmetrical dialkyl ether where the alkyl can be 2-butyl or isopropyl group and diisopropyl and di-2-butyl ether meet the dialkyl ether limitation of the instant claims.

Therefore, it would have been obvious to a skilled artisan at the time the invention was made to employ Rath's teaching to prepare polyisobutenes in the

presence of a trifluoride/secondary alcohol/dialkyl ether complex wherein the dialkyl ether is a symmetrical secondary dialkyl ether, such as diisopropyl ether and di-sec-butyl ether (same as di-2-butyl ether) because such within the scope of Rath's teaching and all of the embodiments of the reference are expected to work and in the absence of any showing of criticality and unexpected results.

(11) Response to Argument

Appellant argues that the examiner has not presented evidence to motivate one of ordinary skill in the art to make the modifications of the prior art necessary to arrive at the claimed subject matter. This is incorrect. As stated in the previous Office action and restated as shown above, Rath teaches that the dialkyl ether can symmetrical C₂-C₂₀ dialkyl ethers and the alkyl groups can be secondary alkyl such as isopropyl and 2-butyl. Therefore, one of ordinary skill in the art would immediately envision Rath's dialkyl ether to be the two simplest symmetrical secondary dialkyl ethers, such as diisopropyl ether and di-sec-butyl ether which are inexpensive and commercially available.

Appellant makes the following statement:

--"Ethers other than tertiary ethers also form complexes with boron trifluoride. However, they alone are not capable of inducing isobutene polymerization."--

It is the examiner's position that those the statement is irrelevant to instant claims since the claimed process is not about using ether alone to induce isobutene polymerization. On the contrary, primary or secondary alcohol is required in the claimed process.

Appellant alleges the surprising founding that "the combination of bis-secondary alcohols with primary alcohols works well even though each component taken alone are not reactive or not reactive enough for preparing high reactive polyisobutenes". However, the alcohol of the instant claims is not limited to primary alcohol, the alcohol of the instant claims read on both primary and secondary alcohol. The rejections are based Rath's teaching of the secondary alcohol.

Appellant's Declaration filed on January 6, 2003 in attempt to show criticality and unexpected results of appellant alleged invention is noted. As indicated in the Office action mailed on August 4, 2003 and restated here again:

The comparative experiment is not based upon the embodiment of the closest prior art cited by the examiner, therefore, it not probative of unexpected results. See MPEP 716 in this regard. For example, in Rath's Examples 6 and 7 cited by the examiner, the dialkyl ether is 2-butyl tert-butyl ether and polymerization temperature is -12 °C compared to dialkyl ether of di-tert-butyl ether and polymerization temperature of -12 °C, respectively, of Comparative Example in the Declaration. It is also noted that the polymers of Rath's Examples 6 and 7 have terminal double contents of 92 and 95 mol% respectively which are in the same range as that of the instant appealed claims. Furthermore, the showing is not commensurate to the scope of the instant claims.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,
Caixa Lu
Caixa Lu, Ph. D.
Primary Examiner
Art Unit 1713

September 10, 2004

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